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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/943,399      10/03/97      VAUGHN      S      97B058

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EXAMINER

GRIFFIN, W

ART UNIT

PAPER NUMBER

1764

28

DATE MAILED:

06/26/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**

Application No.

08/943,399

Applicant(s)

VAUGHN, STEPHEN NEIL

Examiner

Walter D. Griffin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2001.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 41-52, 55, 56 and 58-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-52, 55, 56 and 58-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1-19-00.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Response to Amendment*

The rejections under 35 USC 112, second paragraph, as detailed in paper no. 24 have been withdrawn in view of the amendment filed on May 8, 2001.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 41, 42, 45, 46, 49-52, 55, 56, 58, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2171718 in view of Kaiser (4,677,243) and Kaiser (4,527,001).

The GB 2171718 reference discloses a method for converting oxygenates to olefins by contacting an oxygenate feed with a catalyst at conversion conditions in a reactor. The olefin-containing product from the reactor is fractionated, the light olefins are recovered, and the heavy

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fraction containing C<sub>4</sub> olefins is recycled to the reaction zone. The recycling results in an increased yield of light olefins. (See page 1, line 56 through page 2, line 29.)

The GB 2171718 reference does not disclose the use of a non-zeolitic molecular sieve in the reaction zone and does not disclose a separate second reaction zone.

The Kaiser ('243) reference discloses a process for converting oxygenates by contacting the feed with a SAPO such as SAPO-34. (See col. 5, lines 32-56.)

The Kaiser ('001) reference discloses a process for converting olefins such as butenes to lighter olefins such as ethylene and propylene by contacting the feed with a SAPO such as SAPO-34. (See col. 1, line 66 through col. 5, line 48 and the examples.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of GB 2171718 by utilizing a SAPO catalyst as disclosed by both Kaiser references because the SAPOs are extremely efficient catalysts for the conversion of oxygenate feeds to light olefins, are effective catalysts for the conversion of heavier olefins such as butenes to lighter olefins such as ethylene and propylene, and additionally have increased life over zeolites. Therefore, substituting the SAPO's of the Kaiser reference for the catalyst of the GB reference would result in the expectation that both oxygenates and heavier olefins would be converted to lighter olefins.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the GB 2171718 by having a separate second reaction zone and passing the heavy fraction to this zone instead of recycling because the same result would be expected as long as the heavy fraction contacts the catalyst at conversion conditions.

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Claims 43, 44, 47, 48, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 2171718 in view of Kaiser (4,677,243) and Kaiser (4,527,001) as applied to claims 41 and 42 above, and further in view of DE 3524890.

The previously discussed references do not disclose the use of a zeolite such as ZSM-5 in a second reactor.

The DE 3524890 reference discloses a process for converting oxygenates to olefins in which a heavy fraction recovered from the olefin product is further contacted with a zeolite (i.e., ZSM-5 type) catalyst. (See the entire document, especially the English language abstract.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the previously-discussed references by further contacting the heavy fraction recovered from the olefin product with a ZSM-5 type zeolite catalyst as suggested by the DE 3524890 reference because additional olefins will be produced.

### ***Response to Arguments***

Applicants assert that the claimed invention is directed to a method for increasing ethylene yield during conversion of oxygenates to olefins and that the UK reference is directed to a method of making propylene. Applicants further argue that there is nothing in the UK reference to suggest the use of a non-zeolitic molecular sieve and that changing the UK catalyst to a SAPO such as disclosed by the Kaiser references would do away with the desired result of increased propylene production in the UK process. These assertions and arguments are not persuasive because the claims are not limited to the production of ethylene but are directed to the production of light olefins. Applicant's own definition for light olefins is ethylene and propylene. Also, the

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UK reference results in the production of C<sub>2</sub> and C<sub>3</sub> olefins. See page 2, lines 20-23. This teaching discloses the same product as claimed. Therefore, the examiner also maintains that the combination of references is proper because the catalysts disclosed by the Kaiser references are effective in the production of ethylene and propylene.

The argument that the claimed process results in an unexpected shift to ethylene content while achieving a high light olefin content is not persuasive because the evidence in Example 1 is not commensurate in scope with the claims.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is 703-305-3774. The examiner can normally be reached on Monday-Friday 6:30 to 4:00; alternate Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.



Walter D. Griffin  
Primary Examiner  
Art Unit 1764

WG  
June 25, 2001